

Two New species of *Amphidromus* (Gastropoda: Camaenidae) from Vietnam

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ABSTRACT Two new species of genus *Amphidromus* Albers, 1850 are described from Vietnam and compared to five other species of this genus: *Amphidromus koenigi* Thach & Huber, 2018, *Amphidromus laii* Thach, 2019, *Amphidromus inconstans* Fulton, 1898, *Amphidromus kaloensis* Fulton, 1896 and *Amphidromus bernardfamyi* Thach, 2017.

KEYWORDS Gastropoda, Helicoidea, Camaenidae, *Amphidromus*, Đắk R'lấp, Đắk Nông, Ea H'leo, Đắk Lắk, Vietnam, new taxon

INTRODUCTION

Amphidromus is a genus of the family Camaenidae with many species collected in Vietnam. In January 2019, two other species of this genus were collected. They were not listed in the works by Parkinson, Hemmen & Groh (1987), Abbott (1989), Dharma (2005), Van der Bijl *et al.* (2010), Stanisic, Shea, Potter & Griffiths (2010, 2017), Schileyko (2011), Tan *et al.* (2011), Parsons (2014), Raheem *et al.*, 2014, Sutcharit *et al.* (2015), Inkhavilay *et al.* (2017), Lok & Tan (2018), Thach (2005, 2007, 2012, 2016, 2017, 2018). In this article, they are described as new to science.

Abbreviations.

MNHN	National Museum of Natural History, Paris, France
NHMUK	Natural History Museum, London, UK
NNT	Collection Dr Thach
HA	Ex-collection Huynh Anh
SH	Shell height
SW	Shell width
BH	Body whorl height
AH	Aperture height

SYSTEMATICS

Class Gastropoda Cuvier, 1797
Superfamily Helicoidea Rafinesque, 1815
Family Camaenidae Pilsbry, 1895
Subfamily Camaeninae Pilsbry & Olsson, 1954
Genus *Amphidromus* Albers, 1850
Type species of genus: *Helix perversus* Linnaeus, 1758

Amphidromus philippeboucheti Thach, 2019
new species
(Figures 1-8)

Description. Shell small for the genus (measuring in average height between 24.2 mm and 34.0 mm), sinistral and elongate tapering in shape with width 53.3% of height (see Table 1). Spire moderately tall, sutures deep. Body whorl inflated and measuring 67% of shell height, periphery rounded. Outer surface ornamented with two black spiral bands at base and many sets of widely-spaced axial lines that are rather straight and parallel. Sculpture consists of weak axial striae. Aperture wide with external pattern visible within, occupying 47.8% of shell height, outer lip moderately thick, slightly reflected and

regularly convex. Umbilicus slightly open, columella curved and bordered by red band. Color yellow with pink outer lip and columella, black apex and axial lines, carmine red subsutural bands.

No	1	2	3	4
SH (mm)	24.2	27.5	30.6	34.0
SW (mm)	13.3	15.4	16.6	16.3
SW/SH	0.55	0.56	0.54	0.48
Mean SW/SH	0.53			
AH (mm)	11.0	13.8	15.1	16.0
AH/SH	0.45	0.50	0.49	0.47
Mean AH/SH	0.48			
BH (mm)	16.0	18.3	20.8	22.9
BH/SH	0.66	0.67	0.68	0.67
Mean BH/SH	0.67			

Table 1. Morphometrics of *Amphidromus philipeboucheti* Thach, 2019.

Diagnosis. The new species is characterized by carmine red subsutural bands, pink outer lip and columella, widely-spaced black axial stripes that are rather straight and consists of three parallel lines.

Type material.
HOLOTYPE 24.2 mm high (Figures 1, 2, 3, 4, 5, 8a) in MNHN with Registration No: MNHN-IM-2000-34687.

Other Material Examined.
Paratypes: all from type locality, Paratype 1, 27.5 mm (Figures 6, 7, 8b); Paratype 2: 30.6 mm and Paratype 3: 34.0 mm in NNT (not illustrated).

Type Locality. Đắk R'lấp District, Đắk Nông Province, Central Vietnam.

Habitat. Around trees, among leaf litter.

Etymology. This new species is named in honor of Prof. Philippe Bouchet of France for his great contribution to the development of malacology.

Discussion. The new species is close to *Amphidromus koenigi* Thach & Huber, 2018 (Figure 9, 10) in two black spiral bands at base, carmine red subsutural bands and aperture with external pattern visible within but differs mainly in absence of turmeric yellow spiral band and presence of series of parallel axial lines. *Amphidromus laii* Thach, 2019 (Figures 11, 12) is distinguished mainly from the new species in smaller adult size, absence of axial stripes at body whorl, translucent white (not pink) outer lip and columella.

Amphidromus huynhi Thach, 2019
new species
(Figures 13-20)

Type material.
Holotype 29.5 mm in MNHN (Figures 13-17) with Registration No: MNHN-IM-2000-34686. Paratype 1: 31.2 mm (Figures 18-20) from type locality, in HA.

Type locality. Ea H'leo District, Đắk Lắk Province, Central Vietnam.

Habitat. Around trees.

Diagnosis. The new species is characterized by small adult size, straight-sided spire and narrow black bars arranged into widely-spaced spiral bands.

Description. Shell small for the genus (measuring in height between 29.5 mm and 31.2 mm), elongate ovate in outline with sinistral coiling. Spire moderately low, sutures slightly constricted. Body whorl inflated and measuring 65.1% of shell height in holotype, periphery rounded. Shell width 47.1% of height, outer

surface ornamented with intermittent, widely spaced spiral bands. Sculpture consists of red (or black) subsutural bands and weak axial riblets that are strongest at dorsal side of body whorl, along the reflected outer lip. Aperture elongate-ovate, occupying 46.1% of shell height in holotype with external pattern visible within, outer lip moderately thick, calloused and slightly reflected. Umbilicus open, columella curved and bordered by a pink red stripe that can be very faint in some specimens. Color yellowish (or white) with black apex and bars.

Etymology. This new species is named in honor of Huynh Anh from Vietnam for supplying the type material.

Discussion. The new species is close to *Amphidromus kaloensis* Fulton, 1896 (Figure 23) but differs mainly in not swollen body whorl, less constricted sutures, straight-sided and more tapering spire, black (not brown) bars at outer surface. *Amphidromus inconstans* Fulton, 1898 (Figures 21, 22) resembles the new species in intermittent spiral bands but differs mainly in broader shape, much yellower background color and body whorl much wider than penultimate whorl. *Amphidromus bernardfamyi* Thach, 2017 (Figure 24) is distinguished mainly from the new species in squarish (not elongate) bars, larger band surrounding columella, widely-open umbilicus and translucent white (not porcelainous white) columella.

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Plate 1. Figures 1-8: *Amphidromus philipeboucheti* Thach, 2019, Đắk Nông, Vietnam - **1:** Holotype 24.2 mm with ventral view in MNHN - **2:** Holotype with reflected outer lip - **3:** Holotype with spire view - **4:** Holotype with dorsal view - **5a:** Holotype with enlarged apex - **5b:** Holotype with enlarged umbilicus - **6:** Paratype 1, 27.5 mm with ventral view - **7:** Paratype 1 with dorsal view - **8a:** Interior view of aperture of holotype - **8b:** Spire view of paratype **1- 9, 10:** *Amphidromus koenigi* Thach & Huber, 2018 for comparison - **11, 12:** *Amphidromus laii* Thach, 2019 for comparison.

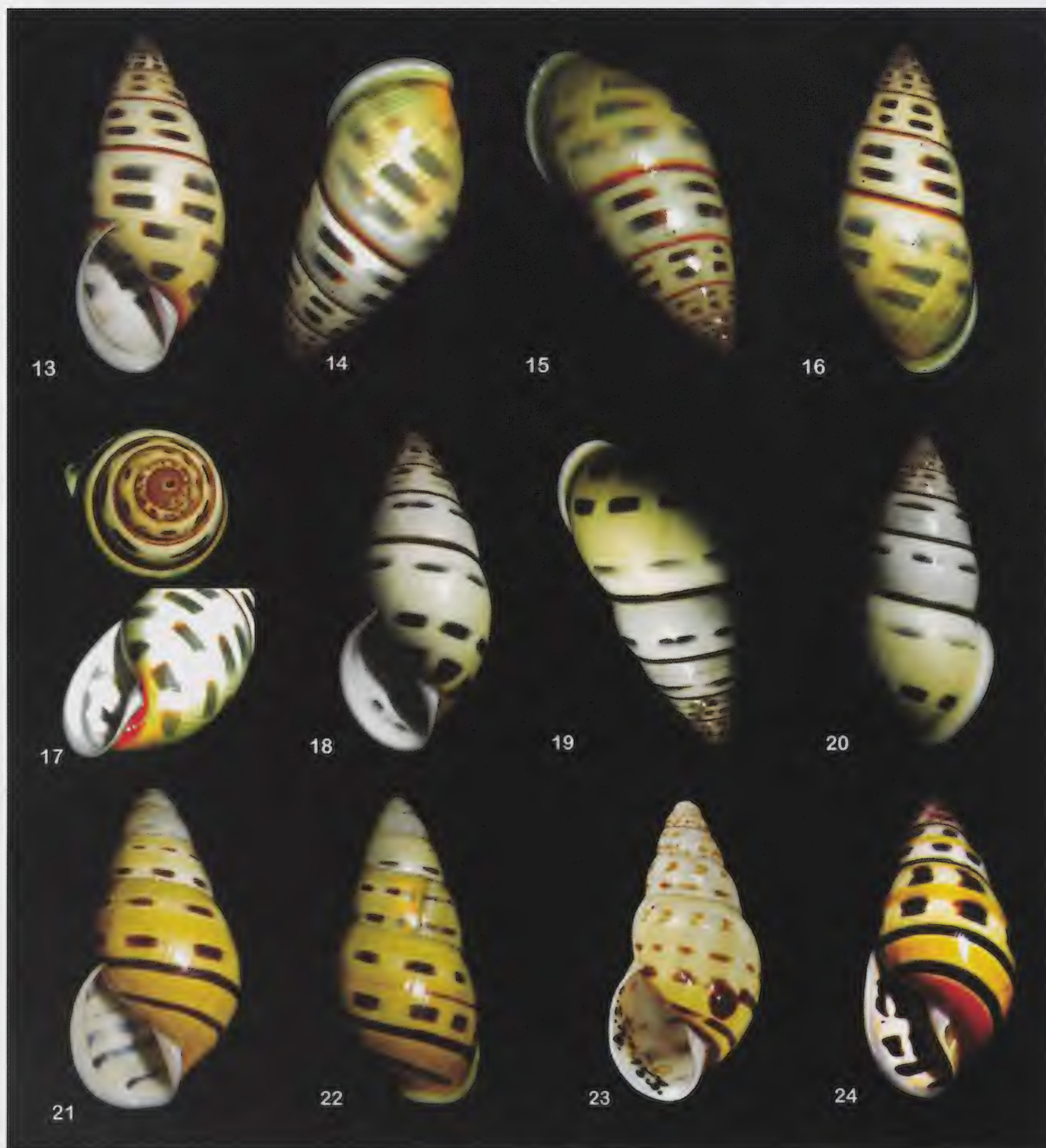


Plate 2. Figures. 13-20: *Amphidromus huynhi* Thach, 2019, Đắk Lắk, Vietnam - **13:** Holotype 29.5 mm with ventral view in MNHN - **14:** Holotype with reflected outer lip - **15:** Holotype with spire view - **16:** Holotype with dorsal view - **17:** Holotype with enlarged apex (top) and umbilicus (bottom) - **18:** Paratype 1, 31.2 mm with ventral view - **19:** Paratype 1 with spire view - **20:** Paratype 1 with dorsal view - **21,22:** *Amphidromus inconstans* Fulton, 1898 for comparison - **23:** *Amphidromus kaloensis* Fulton, 1896 for comparison, photo of NHMUK - **24:** *Amphidromus bernardfamyi* Thach, 2017 for comparison.